

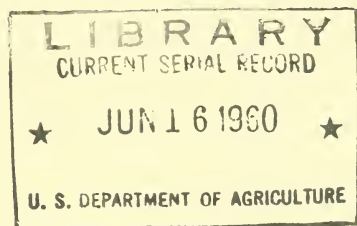
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American Woods

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Red Alder



Forest Service
U.S. DEPARTMENT OF AGRICULTURE

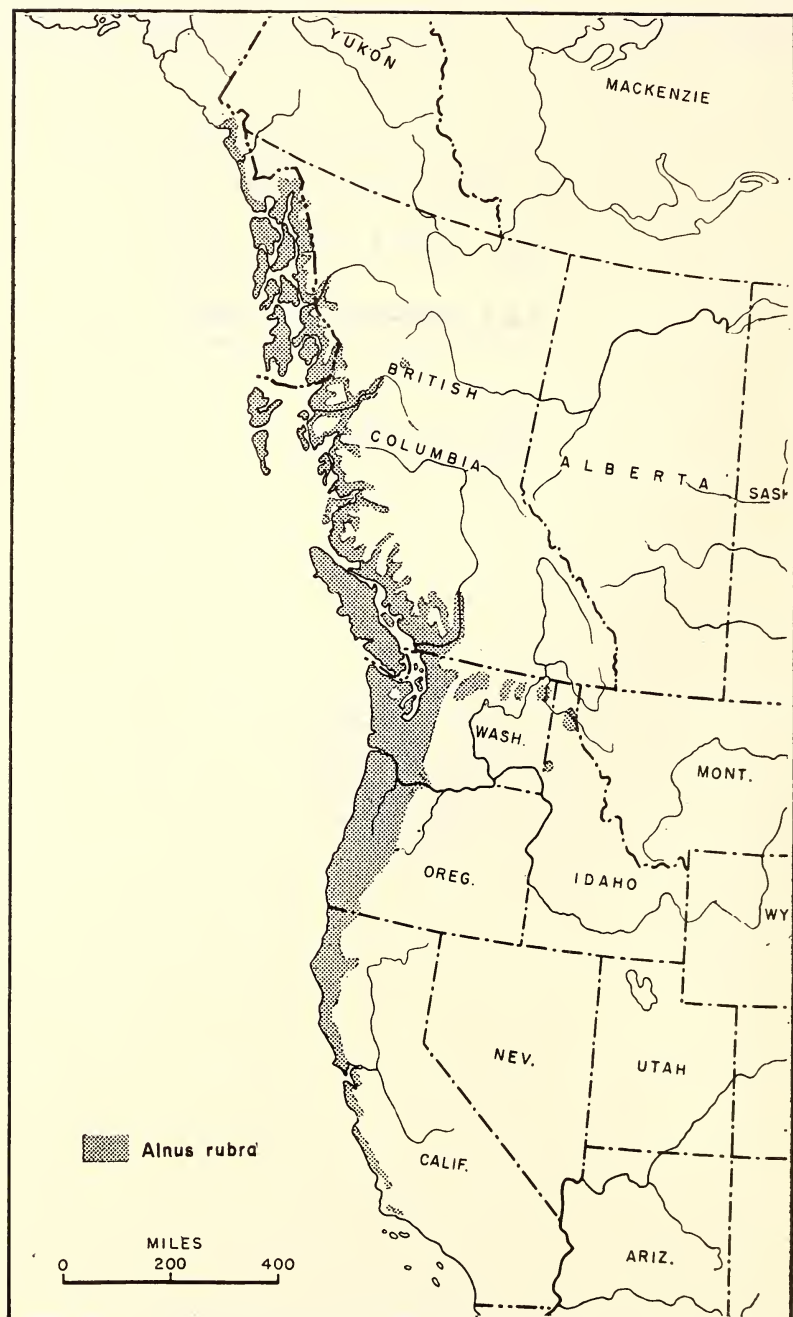


FIGURE 1.—Range of red alder (*Alnus rubra*).

Red Alder

(*Alnus rubra*)

By H. S. BETTS, formerly senior engineer, Division of Forest Products ¹

Red alder is a fast-growing, short-lived hardwood tree that occurs in limited quantities along the western coast of North America from Alaska to southern California. It grows best in Washington and Oregon at low elevations where the climate is mild and the rainfall heavy. Under such conditions, the trees attain an average diameter of about 16 inches in 50 years and are then considered mature and ready to cut. Older trees grow comparatively slower and are much more subject to heart rot. Red alder is the leading hardwood in the Pacific Northwest; its commercial importance is heightened because of the scarcity of hardwoods in that region. The wood is brownish yellow, intermediate in strength properties, and lacks resistance to decay. It is used almost entirely for medium-grade furniture.

The rapid growth of red alder even on poor sites (provided they are moist), its soil-enriching ability, the ease with which a stand can be obtained, and the increased use of the wood in recent years indicate that consideration should be given in forest-management plans to its continued production on certain types of forest land in the Pacific Northwest.

Nomenclature.—In the regions where red alder grows, the name is commonly shortened to alder. Other names sometimes used are Oregon alder, western alder, and Pacific Coast alder.

Distribution and growth.—The natural range of growth of red alder is along the western coast of North America from southern Alaska to southern California (fig. 1). The tree requires abundant soil moisture for its best development. It will not endure severe cold and is confined to low elevations. Throughout the greater part of its range, red alder occurs as a comparatively small-sized tree in mixture with other moisture-seeking trees. In bottom lands, along water-courses, and on moist slopes, however, it often forms practically pure stands.

Seed is produced in abundance and scattered sufficiently by the wind to insure a good crop of seedlings on nearby burns and areas from which such conifers as Douglas-fir and Sitka spruce have been logged. Seedlings germinate and grow in a wide range of soils in the

¹ Revised by Division of Forest Products Research, Forest Service, Washington, D.C., and Forest Products Laboratory, Forest Service, Madison, Wis. Mr. Betts retired in January 1945.

Production data are derived from the 1954 census of manufactures or from later estimates. Figures in table 1 are from special detailed surveys covering the use of individual species in the manufacture of wood products; the latest survey was taken for 1948.

open and in partial shade, but not in dense shade. Red alder also reproduces from root and stump sprouts, but less effectively than from seed. It grows rapidly in early life and overtops competing coniferous species, even Douglas-fir. As it nears maturity, however, the rate of growth slows down. It is then surpassed by competing species, which may ultimately cut off the sunlight that red alder requires. These temporary stands of red alder on cut-over and burned-over areas enrich impoverished soil by humus-producing leaves and nitrogen-producing roots, thus bringing about a condition favorable to a new stand of conifers.

Red alder matures in about 50 years and is considered old at 80 years. Conditions best suited to its development are found in Washington and Oregon. Here mature forest trees are generally from 80 to 100 feet in height and from 14 to 18 inches in diameter. Trees growing in the open sometimes attain a height of 120 feet and a diameter of 4 feet. Average measurements of 115 typical trees of various ages in the Puget Sound region of Washington were: Age 25 years—height 75 feet, diameter 10.2 inches; age 35 years—height 85.8 feet, diameter 11.9 inches; age 50 years—height 97.5 feet, diameter 16 inches.

Red alder trees are subject to attack by the false-tinder fungus (*Fomes igniarius*) that causes heart rot. This fungus, however, does little damage to trees less than 50 years of age. Damage from fire is also slight on account of the damp conditions under which red alder ordinarily grows.

Supply.—The total stand of red alder of sawtimber size in the United States was estimated at 9.4 billion board feet in 1953. Of this volume, 5.3 billion board feet was located in Washington, 3.9 billion board feet in Oregon, and 200 million board feet in California.

Properties.—There is no visible distinction between the sapwood and heartwood of red alder. Both are nearly white on freshly cut surfaces and both turn to a light reddish brown shortly after exposure; later, when fully seasoned, they become a pale yellow. The wood is generally close and uniform in texture, and the grain straight. It is easy to work with tools. The annual rings are made up of comparatively wide bands of springwood and narrow bands of summerwood, the latter showing as fine lines in a radial section.

The wood is moderately light in weight,² moderately strong in bending (as in a beam), moderately strong in compression (as in a post), moderately stiff, moderately soft, and moderately low in ability to resist shock. It has little tendency to split in nailing and has moderate nail-holding ability. The wood can be glued satisfactorily, provided moderate care is used in the gluing operation. It takes and holds paint and enamel satisfactorily. Red alder shrinks moderately but can be kiln-dried. The use of proper drying schedules insures against large losses from warping, cupping, and checking. The wood is classed as low in resistance to decay and in this respect is comparable to aspen or white fir. Green lumber is especially susceptible to attack by decay-producing organisms. If awaiting kiln-drying, such lumber must be open-piled promptly in order to avoid deterioration.

² The average weight of red alder in a thoroughly air-dry condition (12 percent moisture) is 28 pounds per cubic foot.

Principal uses.—The outstanding use for red alder is for furniture (including chairs). Nearly 99 percent of the wood that was manufactured into wood products in recent years went into this use. Red alder has proved very satisfactory for enameled furniture, for the cores of panels faced with the more expensive cabinet woods such as mahogany and black walnut, for the turned parts of low-priced chairs, and for drawer sides, bottoms, and ends. Besides being used for furniture, red alder is used in small quantities for fixtures, general millwork, and handles. Lately red alder has become important as pulpwood in the Pacific Northwest. The wood has also proved suitable for the manufacture of the wooden parts of shoes.



FIGURE 2.—Lumber production of red alder (*Alnus rubra*), 1907-54, in the United States.

Table 1 shows the amounts of red alder used in the manufacture of wooden products in 1912, 1928, 1933, 1940, and 1948. It includes red alder in the form of logs and bolts, and lumber.

Production.—The production of red alder lumber in the United States amounted to 18.9 million board feet in 1954 (fig. 2). About two-thirds of this volume or 12.4 million board feet was produced in Oregon, 5.1 million board feet in Washington, and 1.4 million board feet in California. The average annual production in the 10-year period, 1945-54, is estimated at about 20 million board feet per year.

Red alder lumber was first reported separately in 1907 when production amounted to 115,000 board feet. Production remained very small (less than 5 million board feet) for the next 20 years, but increased very rapidly in the late 1920's. Peak production of approximately 34 million board feet was recorded in 1936; it reached almost the same level in 1946.

TABLE 1—*Red alder used in the manufacture of wooden products, by specified years, 1912-48*

Product	1912	1928	1933	1940	1948
	<i>M bd. ft.</i>	<i>M bd. ft.</i>	<i>M bd. ft.</i>	<i>M bd. ft.</i>	<i>M bd. ft.</i>
Airplanes.....			19		
Car construction and repair.....		3			
Containers.....		30	8		1
Crossarms.....					92
Electrical equipment.....					2
Fixtures.....		260	10	143	97
Furniture.....	1, 417	17, 836	20, 349	37, 538	30, 728
Gunstocks, firearms.....					70
Handles.....	362	45		48	134
Instruments, musical.....		8			7
Instruments, professional and scientific.....					76
Machinery.....	6			25	5
Matches.....		32			
Millwork.....	¹ 436	¹ 17	39	126	166
Patterns.....				1	
Plumbers' woodwork.....					245
Printing material.....				8	
Radios, phonographs, sewing machines.....				17	696
Rollers, shade and map.....				38	
Ship and boat building.....		2			10
Shuttles, spools, and bobbins.....					12
Signs, scenery, displays.....					
Sporting equipment, athletic and playground.....					12
Toys.....		2	2	6	371
Vehicles, motor.....				3	
Woodenware, novelties, and miscellaneous.....	28	123	81	26	4, 460
Total.....	2, 249	18, 358	20, 508	37, 979	37, 184

¹ Includes planing mill products such as flooring, siding, ceiling.

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